

537,116

Rec'd PCT/PTO 02 JUN 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/049899 A2

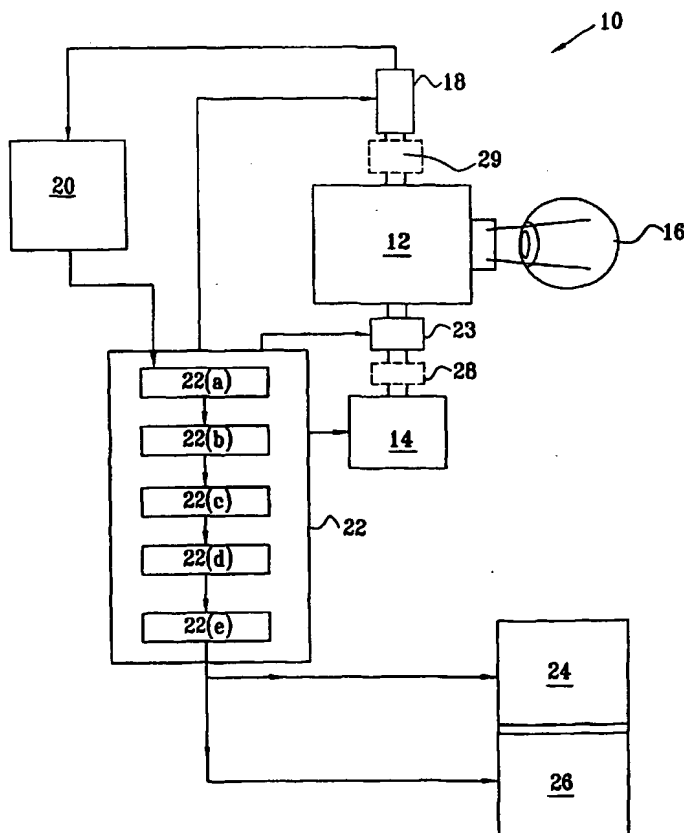
- (51) International Patent Classification⁷: **A61B**
- (21) International Application Number:
PCT/IL2003/001020
- (22) International Filing Date: 2 December 2003 (02.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/430,268 2 December 2002 (02.12.2002) US
- (71) Applicant (for all designated States except US): **YEDA RESEARCH AND DEVELOPMENT CO. LTD.** [IL/IL]; at The Weizmann Institute of Science, P.O. Box 95, 76100 Rehovot (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **GRINVALD,**

Amiram [IL/IL]; 1 Meonot Wix, Weizmann Institute of Science, 76100 Rehovot (IL). NELSON, Darin [US/IL]; 6 Lechi Street, 76217 Rehovot (IL). VANZETTA, Ivo [IT/FR]; 167 Avenue Pierre Mendes, Cedex 20, F-13008 Marseille (FR).

- (74) Agents: **SANFORD T. COLB & CO.** et al.; P.O. Box 2273, 76122 Rehovot (IL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: CHARACTERIZATION OF ARTERIOSCLEROSIS BY OPTICAL IMAGING



(57) **Abstract:** A method and system for detecting abnormalities in the properties of the walls of a subject's blood vessels by observing the characteristics of blood flow in vessels which are optically accessible, such as the retinal vasculature. A time sequenced series of images is taken, and the images are processed to eliminate the background and render erythrocyte motion visible. Information about the state of the inner wall of the blood vessel which has been imaged is obtained from the characteristics of this blood flow. This information can be extrapolated to provide information about the state of the blood vessels elsewhere in the subject. In addition, a system and method is described for detecting arteriosclerotic plaque on the walls of blood vessels by labeling the plaque with a molecular label having desired optical or radioactive properties, and directly imaging the plaque either in an optically accessible blood vessel, or by imaging radioactive label in the plaque in a blood vessel anywhere in the body.

WO 2004/049899 A2